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for prior to July 1, 1969, shall meet the requirements of § 92.25-90.

[CGFR 65-50, 30 FR 16983, Dec. 30, 1965, as amended by CGFR 69-72, 34 FR 17484, Oct. 29, 1969; CGD 80-120, 47 FR 5723, Feb. 8, 1982]

§ 92.25-5 Where rails required.

(a) All vessels shall have efficient guard rails or bulwarks on decks and bridges. The height of rails or bulwarks shall be at least 39½ inches from the deck except that where this height would interfere with the normal operation of the vessel, a lesser height may be approved by the Commandant. At exposed peripheries of the freeboard and superstructure decks, the rails shall be in at least three courses, including the top. The opening below the lowest course shall not be more than 9 inches. The courses shall not be more than 15 inches apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck. On other decks and bridges the rails shall be in at least two courses, including the top, approximately evenly spaced. If it can be shown to the satisfaction of the Officer in Charge, Marine Inspection, that the installation of rails of such height will be unreasonable and impracticable, having regard to the business of the vessel, rails of a lesser height or in some cases grab rails may be accepted and inboard rails may be eliminated if the deck is not generally accessible.

(b) Where it can be shown to the satisfaction of the Commandant that a vessel is engaged exclusively in voyages of a sheltered nature, the provisions of paragraph (a) of this section may be relaxed.

[CGFR 69-72, 34 FR 17484, Oct. 29, 1969, as amended by CGD 80-120, 47 FR 5723, Feb. 8, 1982]

§ 92.25-10 Storm rails.

(a) On vessels in ocean and coastwise service, suitable storm rails shall be installed in all passageways and at the deckhouse sides where persons on board might have normal access. Storm rails shall be installed on both sides of passageways which are 6 feet or more in width.

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§ 92.25-15 Guards in dangerous places.

(a) Suitable hand covers, guards, or rails shall be installed in way of all exposed and dangerous places such as gears, machinery, etc.

§ 92.25-90 Vessels contracted for prior to July 1, 1969.

(a) Vessels contracted for prior to July 1, 1969, assigned a deeper load line under part 42 of subchapter E (Load Lines) of this chapter shall have efficient guard rails or bulwarks as required by § 92.25-5. Otherwise, existing structure, arrangements, materials, and facilities previously approved will be considered satisfactory so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original construction. However, in no case will greater departure from the standards of §§ 92.25-5 through 92.25-15 be permitted than presently exists.

[CGFR 69-72, 34 FR 17484, Oct. 29, 1969, as amended by CGD 80-120, 47 FR 5723, Feb. 8, 1982]

PART 93—STABILITY

AUTHORITY: 46 U.S.C. 3306, 5115; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; 49 CFR 1.46.

Subpart 93.01—Application

§ 93.01-1 General.

Each vessel must meet the applicable requirements in subchapter S of this chapter.

[CGD 79-023, 48 FR 51008, Nov. 4, 1983]

PART 95—FIRE PROTECTION EQUIPMENT

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- 95.50–1 Application.
- 95.50–5 Classification.
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Subpart 95.60—Fire Axes

- 95.60–1 Application.
- 95.60–5 Number required.
- 95.60–10 Location.

AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

SOURCE: CGFR 65–50, 30 FR 17001, Dec. 30, 1965, unless otherwise noted.

Subpart 95.01—Application

§ 95.01–1 General; preemptive effect.

(a) The provisions of this part shall apply to all vessels except as specifically noted in this part.

(b) The regulations in this part have preemptive effect over State or local regulations in the same field.

[CGFR 65–50, 30 FR 17001, Dec. 30, 1965, as amended by USCG–2006–24797, 77 FR 33878, June 7, 2012]

§ 95.01–2 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the

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National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Also, it is available for inspection at Coast Guard Headquarters. Contact Commandant (CG-ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593-7509; telephone 202-372-1405. The material is also available from the sources listed in paragraphs (b) and (c) of this section.

(b) ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, 877-909-2786, <http://www.astm.org>.

(1) ASTM F1121-87 (Reapproved 2010), Standard Specification for International Shore Connections for Marine Fire Applications, (approved March 1, 2010), incorporation by reference approved for § 95.10-10.

(2) [Reserved]

(c) National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101, telephone 800-344-3555, <http://www.nfpa.org>.

(1) NFPA 13-1996, Standard for the Installation of Sprinkler Systems, incorporation by reference approved for § 95.30-1.

(2) [Reserved]

[USCG-2009-0702, 74 FR 49232, Sept. 25, 2009, as amended by USCG-2012-0832, 77 FR 59780, Oct. 1, 2012; USCG-2012-0866, 78 FR 13251, Feb. 27, 2013; USCG-2013-0671, 78 FR 60151, Sept. 30, 2013]

§ 95.01-5 Equipment installed but not required.

(a) Where fire detecting or extinguishing systems or equipment are not required, but are installed, the system or equipment and its installation shall meet the requirements of this part.

Subpart 95.05—Fire Detecting and Extinguishing Equipment, Where Required

§ 95.05-1 Fire detecting, manual alarm, and supervised patrol systems.

(a) Fire detecting, manual alarm, and supervised patrol systems are not re-

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quired except in special cases; but if installed, the systems shall meet the applicable requirements of part 76 of subchapter H (Passenger Vessels) of this chapter.

(b) In each compartment containing explosives, and in adjacent cargo compartments, there shall be provided a smoke detecting or other suitable type fire detecting system.

(c) Enclosed spaces which are “specially suitable for vehicles” shall be fitted with an approved fire or smoke detecting system.

[CGFR 66-33, 31 FR 15285, Dec. 6, 1966]

§ 95.05-5 Fire main system.

(a) Fire pumps, hydrants, hose, and nozzles shall be installed on the following vessels:

(1) On all self-propelled vessels.

(2) On all barges with sleeping accommodations for more than 12 persons.

(b) The arrangements and details of the fire main system shall be as set forth in subpart 95.10.

§ 95.05-10 Fixed fire extinguishing systems.

(a) Approved fire extinguishing systems may be used or required in locations delineated in this section on the following vessels. Previously approved installations may be retained as long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(1) On all self-propelled vessels other than yachts and fishing vessels.

(2) On all barges with sleeping accommodations for more than 12 persons.

(b) A fixed carbon dioxide or other approved system must be installed in all cargo compartments and tanks for combustible cargo, except for vessels engaged exclusively in the carriage of coal or grain in bulk. For cargo compartments and tanks fitted with a fixed carbon dioxide or other approved system a deck foam system is not required, instead of the carbon dioxide system or other approved system, the following systems may be used or required in special cases:

(1) A fixed foam system may be used in cargo tanks.

(2) A water sprinkling system may be required, and the details of such system will be subject to special approval,

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in cases where a cargo is normally accessible and is considered to be a part of the working or living quarters.

(3) Spaces “specially suitable for vehicles” must be fitted with an approved carbon dioxide system. Alternately, the Commandant may permit the installation of an approved water sprinkler system or other suitable system.

(c) On vessels other than motorboats, a fixed carbon dioxide or other approved system must be installed in all lamp and paint lockers, oil rooms, and similar spaces.

(d) On vessels of 1,000 gross tons and over, contracted for on or after November 19, 1952, or where conversion from coal to oil is contracted for on or after November 19, 1952, a fixed carbon dioxide, foam, or water spray system shall be installed in all spaces containing oil fired boilers, either main or auxiliary, or their fuel oil units, valves, or manifolds in the line between the settling tanks and the boilers.

(e) Fire extinguishing systems shall be provided for internal combustion installations in accordance with the following:

(1) If a fixed fire-extinguishing system is installed to protect an internal combustion propelling machinery installation, the system shall be of the carbon dioxide type.

(2) On vessels of 1,000 gross tons and over on an international voyage, the construction or conversion of which is contracted for on or after May 26, 1965, a fixed carbon dioxide system shall be installed in all spaces containing internal combustion or gas turbine main propulsion machinery, auxiliaries with an aggregate power of 1,000 b. hp. or greater, or their fuel oil units, including purifiers, valves, and manifolds.

(3) On vessels, the construction, conversion or automation of which is contracted for on or after July 1, 1968, the systems shall be in accordance with the following:

(i) A fixed carbon dioxide system shall be installed in any space containing machinery using fuel having a flashpoint of less than 110 °F.

(ii) On vessels of 1,000 gross tons and greater, a fixed carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 must be installed in any space that contains internal combustion

or gas turbine main propulsion machinery, or auxiliary machinery with an aggregate power of 1,000 b.h.p. or greater, or the fuel oil units of such machinery, including purifiers, valves, and manifolds.

(f) On vessels contracted for on or after November 19, 1952, where an enclosed ventilating system is installed for electric propulsion motors or generators, a fixed carbon dioxide extinguishing system must be installed in such a system.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGFR 66-33, 31 FR 15285, Dec. 6, 1966; CGFR 67-90, 33 FR 1016, Jan. 26, 1968; CGD 95-027, 61 FR 26006, May 23, 1996; USCG-2006-24797, 77 FR 33878, June 7, 2012]

§ 95.05-15 Hand portable fire extinguishers and semiportable fire extinguishing systems.

(a) Approved hand portable fire extinguishers and semiportable fire extinguishing systems shall be installed on all vessels, other than unmanned barges and fishing vessels, as set forth in subpart 95.50.

Subpart 95.10—Fire Main System, Details

§ 95.10-1 Application.

(a) The provisions of this subpart, with the exception of § 95.10-90, shall apply to all fire main installations contracted for on or after May 26, 1965. Installations contracted for prior to May 26, 1965, shall meet the requirements of § 95.10-90.

§ 95.10-5 Fire pumps.

(a) Vessels shall be equipped with independently driven fire pumps in accordance with Table 95.10-5(a).

TABLE 95.10-5(a)

| Gross tons | | Minimum number of pumps | Hose and hydrant size, inches | Nozzle orifice size, inches | Length of hose feet |
|------------|----------|-------------------------|-------------------------------|-----------------------------|---------------------|
| Over | Not over | | | | |
| | 100 | 1 | 1 1/2 | 1 1/2 | 150 |
| 100 | 1,000 | 1 | 1 1/2 | 5/8 | 50 |
| 1,000 | 1,500 | 2 | 1 1/2 | 5/8 | 50 |
| 1,500 | 2 | 2 2 1/2 | 2 7/8 | 2 5/8 | |

¹On vessels of 65 feet in length or less, 3/4-inch hose of good commercial grade together with a commercial garden hose nozzle may be used. The pump may be hand operated and the length of hose shall be sufficient to assure coverage of all parts of the vessel.

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²75 feet of 1½-inch hose and ⅝-inch nozzle may be used where specified by § 95.10-10(b) for interior locations and 50 feet of 1½-inch hose may be used in exterior locations on vessels in other than ocean or coastwise service.

(b) On vessels of 1,000 gross tons and over on an international voyage, each required fire pump, while delivering water thru the fire main system at a pressure corresponding to that required by paragraph (c) of this section, shall have a minimum capacity of at least two-thirds of that required for an independent bilge pump. However, in no case shall the capacity of each fire pump be less than that otherwise required by this section.

(c) Each pump shall be capable of delivering water simultaneously from the two highest outlets at a Pitot tube pressure of approximately 50 p.s.i. Where 1½-inch hose is permitted in lieu of 2½-inch hose by footnote 2 of Table 95.10-5(a), the pump capacity shall be determined on the same basis as if 2½-inch hose had been permitted. Where ¾-inch hose is permitted by Table 95.10-5(a), the Pitot tube pressure need be only 35 p.s.i.

(d) Fire pumps shall be fitted on the discharge side with relief valves set to relieve at 25 p.s.i. in excess of the pressure necessary to maintain the requirements of paragraph (c) of this section or 125 p.s.i., whichever is greater. Relief valves may be omitted if the pumps, operating under shut-off conditions, are not capable of developing a pressure exceeding this amount.

(e) Fire pumps shall be fitted with a pressure gage on the discharge side of the pumps.

(f) Fire pumps may be used for other purposes provided at least one of the required pumps is kept available for use on the fire system at all times. In no case shall a pump having connection to an oil line be used as a fire pump. Branch lines connected to the fire main for purposes other than fire and deck wash shall be so arranged that adequate water can be made continuously available for firefighting purposes.

(g) The total area of the pipes leading from a pump shall not be less than the discharge area of the pump.

(h) On vessels with oil fired boilers, either main or auxiliary, or with internal combustion propulsion machinery, where 2 fire pumps are required, they shall be located in separate spaces, and

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the arrangement of pumps, sea connections, and sources of power shall be such as to insure that a fire in any one space will not put all of the fire pumps out of operation. However, when it is shown to the satisfaction of the Commandant that it is unreasonable or impracticable to meet this requirement due to the size or arrangement of the vessel, or for other reasons, the installation of a total flooding carbon dioxide or clean agent system may be accepted as an alternate method of extinguishing any fire that could affect the powering and operation of at least one of the required fire pumps.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGFR 66-33, 31 FR 15285, Dec. 6, 1966; CGD 95-028, 62 FR 51206, Sept. 30, 1997; USCG-2006-24797, 77 FR 33878, June 7, 2012]

§ 95.10-10 Fire hydrants and hose.

(a) The size of fire hydrants, hose, and nozzles and the length of hose required shall be as noted in Table 95.10-5(a).

(b) In lieu of the 2½-inch hose and hydrants specified in Table 95.10-5(a), on vessels over 1,500 gross tons, the hydrants in interior locations may have siamese connections for 1½-inch hose. In these cases the hose shall be 75 feet in length, and only one hose will be required at each fire station; however, if all such stations can be satisfactorily served with 50-foot lengths, 50-foot hose may be used.

(c) On vessels of 500 gross tons and over there must be at least one shore connection to the fire main available to each side of the vessel in an accessible location. Suitable cut-out valves and check valves must be provided. Suitable adapters also must be provided for furnishing the vessel's shore connections with couplings mating those on the shore fire lines. Vessels of 500 gross tons and over on an international voyage, must be provided with at least one international shore connection complying with ASTM F 1121 (incorporated by reference, see § 95.01-2). Facilities must be available enabling an international connection to be used on either side of the vessel.

(d) Fire hydrants shall be of sufficient number and so located that any part of the vessel, other than main machinery spaces, accessible to persons on

board while the vessel is being navigated and all cargo holds may be reached with at least 2 streams of water from separate outlets, at least one of which shall be from a single length of hose. In main machinery spaces, all portions of such spaces shall be capable of being reached by at least 2 streams of water, each of which shall be from a single length of hose from separate outlets; however, this requirement need not apply to shaft alleys containing no assigned space for the stowage of combustibles. Fire hydrants shall be numbered as required by §97.37-15 of this subchapter.

(e) All parts of the fire main located on exposed decks shall either be protected against freezing or be fitted with cut-out valves and drain valves so that the entire exposed parts of such piping may be shut off and drained in freezing weather. Except when closed to prevent freezing, such valves shall be sealed open.

(f) The outlet at the fire hydrant shall be limited to any position from the horizontal to the vertical pointing downward, so that the hose will lead horizontally or downward to minimize the possibility of kinking.

(g) Each fire hydrant must have at least one length of firehose, a spanner, and a hose rack or other device for stowing the hose.

(h) Fire hose shall be connected to the outlets at all times. However, on open decks where no protection is afforded to the hose in heavy weather, or where the hose may be liable to damage from the handling of cargo, the hose may be temporarily removed from the hydrant and stowed in an accessible nearby location.

(i) Each firehose on each hydrant must have a combination solid stream and water spray firehose nozzle approved under subpart 162.027 of this chapter. Firehose nozzles previously approved under subpart 162.027 of this chapter may be retained so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(j) In each propulsion machinery space containing an oil fired boiler, internal combustion machinery, or oil fuel unit on a vessel on an international voyage or of 1000 gross tons or

more, each firehose having a combination nozzle previously approved under subpart 162.027 of this chapter must have a low-velocity water spray applicator that is also previously approved under subpart 162.027 of this chapter. The length of the applicator must be less than 1.8 meters (6 feet).

(k) Fixed brackets, hooks, or other means for stowing an applicator must be next to each fire hydrant that has an applicator under paragraph (j) of this section.

(l) Firehose shall not be used for any other purpose than fire extinguishing, drills, and testing.

(m) Fire hydrants, nozzles, and other fittings shall have threads to accommodate the hose connections noted in paragraph (l) of this section.

(n) Firehose and couplings must be as follows:

(1) Fire station hydrant connections shall be brass, bronze, or other equivalent metal. Couplings shall either:

(i) Use National Standard fire hose coupling threads for the 1½ inch (38 millimeter) and 2½ inch (64 millimeter) hose sizes, i.e., 9 threads per inch for 1½ inch hose, and 7½ threads per inch for 2½ inch hose; or

(ii) Be a uniform design for each hose diameter throughout the vessel.

(2) Where 19 millimeters (¾ inch) hose is permitted by table 95.10-5(a), the hose and couplings shall be of good commercial grade.

(3) Each section of firehose must be lined commercial firehose that conforms to Underwriters' Laboratories, Inc. Standard 19 or Federal Specification ZZ-H-451E. Hose that bears the label of Underwriters' Laboratories, Inc. as lined firehose is accepted as conforming to this requirement.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGD 74-60, 41 FR 43151, Sept. 30, 1976; CGD 76-086, 44 FR 2392, Jan. 11, 1979; CGD 88-032, 56 FR 35826, July 29, 1991; CGD 95-012, 60 FR 48051, Sept. 18, 1995; CGD 95-027, 61 FR 26007, May 23, 1996; CGD 95-028, 62 FR 51206, Sept. 30, 1997; USCG-2000-7790, 65 FR 58461, Sept. 29, 2000]

§95.10-15 Piping.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

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(b) All distribution cut-off valves shall be marked as required by § 97.37-10 of this subchapter.

(c) For vessels on an international voyage, the diameter of the fire main shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously. This requirement is in addition to § 95.10-5(c). The discharge of this quantity of water through hoses and nozzles at a sufficient number of adjacent hydrants shall be at a minimum Pitot tube pressure of approximately 50 pounds per square inch.

§ 95.10-90 Installations contracted for prior to May 26, 1965.

Installations contracted for prior to May 26, 1965, shall meet the following requirements:

(a) Except as specifically modified by this paragraph, the requirements of §§ 95.10-5 through 95.10-15 shall be complied with insofar as the number and general type of equipment is concerned. Existing equipment, except firehose nozzles and low-velocity water spray applicators, previously approved, but not meeting the applicable requirements of §§ 95.10-5 through 95.10-15 may be continued in service so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs, alterations, and replacements may be permitted to the same standards as the original installations. However, all new installations or major replacements shall meet the applicable requirements in this subpart.

(b) All vessels contracted for prior to November 19, 1952, other than motorboats, shall be fitted with fire pumps, hoses, and nozzles in accordance with Table 95.10-90(a)(2).

TABLE 95.10-90(a)(2)

| Gross tons | | Min- imum number of pumps | Min- imum hose and hy- drant size, inches | Nozzle orifice size, inches | Length of hose feet |
|------------|-------------|---------------------------------------|---|--------------------------------------|---------------------------|
| Over | Not over | | | | |
| 100 | 1 | 1 1/2 | 1 5/16 | 1 50 | |
| 100 | 1,000 | 1 | 2 1/2 | 2 5/8 | 2 50 |

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TABLE 95.10-90(a)(2)—Continued

| Gross tons | | Min- imum number of pumps | Min- imum hose and hy- drant size, inches | Nozzle orifice size, inches | Length of hose feet |
|------------|-------------|---------------------------------------|---|--------------------------------------|---------------------------|
| Over | Not over | | | | |
| 1,000 | 2 | 2 1/2 | 2 5/8 | 2 50 | |

¹ On vessels of 65 feet in length or less, 3/4-inch hose of good commercial grade together with a commercial garden hose nozzle may be used. The pump may be hand operated and the length of hose shall be sufficient to assure coverage of all parts of the vessel.

² May use 50 feet of 2 1/2-inch hose with 7/8-inch nozzles for exterior stations. 75 feet of 1 1/2-inch hose with 5/8-inch nozzles may be used for interior station in which case such interior stations shall have siamese connections.

(c) Vessels contracted for prior to July 1, 1935, need not meet the requirements of § 95.10-5(h), and vessels contracted for on or after July 1, 1935, but prior to November 19, 1952, may have a carbon dioxide “bilge” in lieu of “total flooding” system. However, in vessels of both categories where a conversion from coal to oil is contracted for on or after November 19, 1952, the provisions of § 95.10-5(h) shall apply.

(d) The general requirements of § 95.10-5(c) through (g), § 95.10-10(d) through (i), and § 95.10-15 shall be complied with insofar as is reasonable and practicable.

(e) Firehose nozzles and low-velocity spray applicators must meet the requirements of 95.10-10(i), 95.10-10(j), and 95.10-10(k).

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGD 76-086, 44 FR 2392, Jan. 11, 1979; CGD 95-027, 61 FR 26007, May 23, 1996]

Subpart 95.13—Steam Smothering Systems

§ 95.13-1 Application.

Steam smothering systems are not permitted on vessels contracted for on or after January 1, 1962. Previously approved installations may be retained as long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

[CGD 95-027, 61 FR 26007, May 23, 1996]

Subpart 95.15—Carbon Dioxide Extinguishing Systems, Details

§ 95.15-1 Application.

(a) Where a carbon dioxide extinguishing system is installed, the provisions of this subpart, with the exception of § 95.15-90, shall apply to all installations contracted for on or after November 19, 1952. Installations contracted for prior to November 19, 1952, shall meet the requirements of § 95.15-90.

(b) The requirements of this subpart are based on a "high pressure system," i.e., one in which the carbon dioxide is stored in liquid form at atmospheric temperature. Details for "low pressure systems," i.e., those in which the carbon dioxide is stored in liquid form at a continuously controlled low temperature, may be specifically approved by the Commandant where it is demonstrated that a comparable degree of safety and fire extinguishing ability is achieved.

§ 95.15-5 Quantity, pipe sizes, and discharge rates.

(a) *General.* The amount of carbon dioxide required for each space shall be as determined by paragraphs (b) through (d) of this section.

(b) *Total available supply.* A separate supply of carbon dioxide need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(c) *Cargo spaces.* (1) The number of pounds of carbon dioxide required for each space shall be equal to the gross volume of the space in cubic feet divided by 30.

(2) Although separate piping shall be led to each cargo hold and 'tween deck, for the purpose of determining the amount of carbon dioxide required, a cargo compartment will be considered as the space between watertight or firescreen bulkheads and from the tank top or lowest deck to the deck head of the uppermost space on which cargo may be carried. If a trunk extends beyond such deck, the trunk volume shall be included. Tonnage openings shall be considered as sealed for this purpose.

(3) Branch lines to the various cargo holds and 'tween decks shall not be less than ¾-inch standard pipe size.

(4) No specific discharge rate need be applied to such systems.

(d) *Machinery spaces, paint lockers, tanks, and similar spaces.* (1) Except as provided in paragraph (d)(3) of this section, the number of pounds of carbon dioxide required for each space shall be equal to the gross volume of the space divided by the appropriate factor noted in Table 95.15-5(d)(1). If fuel can drain from the compartment being protected to an adjacent compartment, or if the compartments are not entirely separate, the requirements for both compartments shall be used to determine the amount of carbon dioxide to be provided. The carbon dioxide shall be arranged to discharge into both such compartments simultaneously.

TABLE 95.15-5(d)(1)

| Gross volume of compartment, cubic feet | | Factor |
|---|-----------|--------|
| Over— | Not over— | |
| 500 | | 15 |
| 500 | 1,600 | 16 |
| 1,600 | 4,500 | 18 |
| 4,500 | 50,000 | 20 |
| 50,000 | | 22 |

(2) For the purpose of the requirements of this paragraph, the volume of the machinery space shall be taken as exclusive of the normal machinery casing unless the boiler, internal combustion machinery, or fuel oil installation extend into such space, in which case the volume shall be taken to the top of the casing or the next material reduction in casing area, whichever is lower. For installations contracted for on or after October 1, 1959, "normal machinery casing" and "material reduction in casing area" shall be defined as follows:

(i) By "normal machinery casing" shall be meant a casing the area of which is not more than 40 percent of the maximum area of the machinery space.

(ii) By "material reduction in casing area" shall be meant a reduction to at least 40 percent of the casing area.

(3) For vessels on an international voyage contracted for on or after May 26, 1965, the amount of carbon dioxide

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required for a space containing propulsion boilers or internal combustion propulsion machinery shall be as given by paragraphs (d) (1) and (2) of this section or by dividing the entire volume, including the casing, by a factor of 25, whichever is the larger.

(4) Branch lines to the various spaces shall be as noted in Table 95.15-5(d)(4).

TABLE 95.15-5(d)(4)

| Maximum quantity of carbon dioxide required, pounds | Minimum pipe size, inches | Maximum quantity of carbon dioxide required, pounds | Minimum pipe size, inches |
|---|---------------------------|---|---------------------------|
| 100 | 1/2 | 2,500 | 2 1/2 |
| 225 | 3/4 | 4,450 | 3 |
| 300 | 1 | 7,100 | 3 1/2 |
| 600 | 1 1/4 | 10,450 | 4 |
| 1,000 | 1 1/2 | 15,000 | 4 1/2 |
| 2,450 | 2 |  | ..... |

(5) Distribution piping within the space shall be proportioned from the supply line to give proper distribution to the outlets without throttling.

(6) The number, type, and location of discharge outlets shall be such as to give a uniform distribution throughout the space.

(7) The total area of all discharge outlets shall not exceed 85 percent nor be less than 35 percent of the nominal cylinder outlet area or the area of the supply pipe, whichever is smaller. The nominal cylinder outlet area in square inches shall be determined by multiplying the factor 0.0022 by the number of pounds of carbon dioxide required, except that in no case shall this outlet area be less than 0.110 square inches.

(8) The discharge of at least 85 percent of the required amount of carbon dioxide shall be complete within 2 minutes.

(e) *Spaces specially suitable for vehicles.* (1) The number of pounds of carbon dioxide required must be equal to the gross volume of the largest space which is capable of being sealed divided by 22. In no case, however, may the quantity be less than that required by paragraph (c)(2) of this section.

(2) The discharge of two thirds of the required quantity of carbon dioxide must be completed within 10 minutes. Any faster discharge rate is also acceptable.

(3) Except as noted in paragraphs (e) (1) and (2) of this section, the require-

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ments of paragraph (d) of this section shall apply.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGFR 66-33, 31 FR 15285, Dec. 6, 1966; CGD 95-028, 62 FR 51207, Sept. 30, 1997; USCG-1999-6216, 64 FR 53226, Oct. 1, 1999; USCG-2006-24797, 77 FR 33878, June 7, 2012]

§ 95.15-10 Controls.

(a) Except as noted in § 95.15-20(b) all controls and valves for the operation of the system shall be outside the space protected, and shall not be located in any space that might be cut off or made inaccessible in the event of fire in any of the spaces protected.

(b) If the same cylinders are used to protect more than one hazard, a manifold with normally closed stop valves shall be used to direct the carbon dioxide into the proper space. If cylinders are used to protect only one hazard, a normally closed stop valve shall be installed between the cylinders and the hazard except for systems of the type indicated in § 95.15-5(d) which contain not more than 300 pounds of carbon dioxide.

(c) Distribution piping to the various cargo spaces shall be controlled from not more than two stations. One of the stations controlling the system for the main machinery space shall be located as convenient as practicable to one of the main escapes from the space. All control stations and the individual valves and controls shall be marked as required by §§ 97.37-10 and 97.37-13 of this subchapter.

(d) Systems of the type indicated in § 95.15-5(d) shall be actuated by one control operating the valve to the space and a separate control releasing at least the required amount of carbon dioxide. These two controls shall be located in a box or other enclosure clearly identified for the particular space. Those systems installed without a stop valve shall be operated by one control releasing at least the required amount of carbon dioxide.

(e) Where provisions are made for the simultaneous release of a given amount of carbon dioxide by operation of a remote control, provisions shall also be made for manual control at the cylinders. Where gas pressure from pilot cylinders is used as a means for releasing the remaining cylinders, not less

than two pilot cylinders shall be used for systems consisting of more than two cylinders. Each of the pilot cylinders shall be capable of manual control at the cylinder, but the remaining cylinders need not be capable of individual manual control.

(f) Systems of the type indicated in §95.15-5(d), other than systems for tanks, which are of more than 300 pounds of carbon dioxide, shall be fitted with an approved delayed discharge so arranged that the alarm will be sounded for at least 20 seconds before the carbon dioxide is released into the space. Such systems of not more than 300 pounds of carbon dioxide shall also have a similar delayed discharge, except for those systems for tanks and for spaces which have a suitable horizontal escape. This paragraph shall be applicable only to systems installed on or after July 1, 1957.

(g) All distribution valves and controls shall be of an approved type. All controls shall be suitably protected.

(h) Complete but simple instructions for the operation of the systems must be located in a conspicuous place at or near all pull boxes, stop valve controls and in the CO₂ cylinder storage room. On systems in which the CO₂ cylinders are not within the protected space, these instructions must also include a schematic diagram of the system and instructions detailing alternate methods of discharging the system should the manual release or stop valve controls fail to operate. Each control valve to branch lines must be marked to indicate the related space served.

(i) If the space or enclosure containing the carbon dioxide supply or controls is to be locked, a key to the space or enclosure shall be in a break-glass-type box conspicuously located adjacent to the opening.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by CGD 74-100B, 40 FR 6209, Feb. 10, 1975; USCG-1999-6216, 64 FR 53226, Oct. 1, 1999]

§95.15-15 Piping.

(a) The piping, valves, and fittings shall have a bursting pressure of not less than 6,000 pounds per square inch.

(b) All piping, in nominal sizes not over ¾ inch shall be at least Schedule 40 (standard weight) and in nominal

sizes over ¾ inch, shall be at least Schedule 80 (extra heavy).

(c) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(d) A pressure relief valve or equivalent set to relieve between 2,400 and 2,800 pounds per square inch shall be installed in the distributing manifold or such other location as to protect the piping in the event that all branch line shut-off valves are closed.

(e) All dead-end lines shall extend at least 2 inches beyond the last orifice and shall be closed with cap or plug.

(f) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(g) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture. Drains and dirt traps shall be located in accessible locations where possible.

(h) Piping shall be used for no other purpose except that it may be incorporated with the fire-detecting system.

(i) Piping passing through living quarters shall not be fitted with drains or other openings within such spaces.

(j) Installation test requirements are:

(1) Upon completion of the piping installation, and before the cylinders are connected, a pressure test shall be applied as set forth in this paragraph. Only carbon dioxide or other inert gas shall be used for this test.

(2) The piping from the cylinders to the stop valves in the manifold shall be subjected to a pressure of 1,000 pounds per square inch. With no additional gas being introduced to the system, it shall be demonstrated that the leakage of the system is such as not to permit a pressure drop of more than 150 pounds per square inch per minute for a 2-minute period.

(3) The individual branch lines to the various spaces protected shall be subjected to a test similar to that described in the preceding paragraph with the exception that the pressure used shall be 600 pounds per square inch in lieu of 1,000 pounds per square inch. For the purpose of this test, the distribution piping shall be capped within the space protected at the first joint ahead of the nozzles.

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(4) In lieu of the tests prescribed in paragraphs (j) (1) through (3) of this section, small independent systems protecting spaces such as emergency generator rooms, lamp lockers, etc., may be tested by blowing out the piping with air at a pressure of at least 100 pounds per square inch.

§ 95.15–20 Carbon dioxide storage.

(a) Except as provided in paragraph (b) of this section, the cylinders shall be located outside the spaces protected, and shall not be located in any space that might be cut off or made inaccessible in the event of a fire in any of the spaces protected.

(b) Systems of the type indicated in § 95.15–5(d), consisting of not more than 300 pounds of carbon dioxide, may have the cylinders located within the space protected. If the cylinder stowage is within the space protected, the system shall be arranged in an approved manner to be automatically operated by a heat actuator within the space in addition to the regular remote and local controls.

(c) The space containing the cylinders shall be properly ventilated and designed to preclude an anticipated ambient temperature in excess of 130 degrees F.

(d) Cylinders shall be securely fastened and supported, and where necessary, protected against injury.

(e) Cylinders shall be so mounted as to be readily accessible and capable of easy removal for recharging and inspection. Provisions shall be available for weighing the cylinders.

(f) Where subject to moisture, cylinders shall be so installed as to provide a space of at least 2 inches between the flooring and the bottom of the cylinders.

(g) Cylinders shall be mounted in an upright position or inclined not more than 30 degrees from the vertical. However, cylinders which are fitted with flexible or bent siphon tubes may be inclined not more than 80 degrees from the vertical.

(h) Where check valves are not fitted on each independent cylinder discharge, plugs or caps shall be provided for closing outlets when cylinders are removed for inspection or refilling.

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(i) All cylinders used for storing carbon dioxide must be fabricated, tested, and marked in accordance with §§ 147.60 and 147.65 of this chapter.

[CGFR 65–50, 30 FR 17001, Dec. 30, 1965, as amended by CGD 84–044, 53 FR 7749, Mar. 10, 1988; USCG–1999–6216, 64 FR 53226, Oct. 1, 1999]

§ 95.15–25 Discharge outlets.

(a) Discharge outlets shall be of an approved type.

§ 95.15–30 Alarms.

(a) A protected space must be fitted with an approved audible alarm if:

(1) The space is normally accessible to persons onboard while the vessel is being navigated; and

(2) Is not a paint locker or similar small space.

(b) The alarm must:

(1) Sound automatically and audibly for at least 20 seconds before carbon dioxide is discharged into the space;

(2) Be conspicuously and centrally located and be marked as required by 46 CFR 97.37–9; and

(3) Use stored gas power provided by the extinguishing agent, gas from pilot cylinders, or gas from cylinders specifically provided to power the alarms.

(c) For systems installed on or after July 1, 1957, alarms are mandatory only for systems required to be fitted with a delayed discharge.

[USCG–2006–24797, 77 FR 33878, June 7, 2012]

§ 95.15–35 Enclosure openings.

(a) Where mechanical ventilation is provided for spaces other than cargo and similar spaces which are protected by a carbon dioxide extinguishing system, provisions shall be made so that the ventilation system is automatically shut down with the operation of the system to that space.

(b) Where natural ventilation is provided for spaces protected by a carbon dioxide extinguishing system, provisions shall be made for easily and effectively closing off the ventilation.

(c) Means shall be provided for closing all other openings to the space protected from outside such space. In this respect, relatively tight doors, shutters, or dampers shall be provided for openings in the lower portion of the space. The construction shall be such

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that openings in the upper portion of the space can be closed off either by permanently installed means or by the use of canvas or other material which is normally carried by the vessel.

§ 95.15–40 Pressure relief.

(a) Where necessary, relatively tight compartments such as refrigeration spaces, paint lockers, etc., shall be provided with suitable means for relieving excessive pressure accumulating within the compartment when the carbon dioxide is injected.

§ 95.15–50 Lockout valves.

(a) A lockout valve must be provided on any carbon dioxide extinguishing system protecting a space over 6,000 cubic feet in volume and installed or altered after July 9, 2013. “Altered” means modified or refurbished beyond the maintenance required by the manufacturer’s design, installation, operation and maintenance manual.

(b) The lockout valve must be a manually operated valve located in the discharge manifold prior to the stop valve or selector valves. When in the closed position, the lockout valve must provide complete isolation of the system from the protected space or spaces, making it impossible for carbon dioxide to discharge in the event of equipment failure during maintenance.

(c) The lockout valve design or locking mechanism must make it obvious whether the valve is open or closed.

(d) A valve is considered a lockout valve if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it.

(e) The master or person-in-charge must ensure that the valve is locked open at all times, except while maintenance is being performed on the extinguishing system, when the valve must be locked in the closed position.

(f) Lockout valves added to existing systems must be approved by the Commandant as part of the installed system.

[USCG–2006–24797, 77 FR 33878, June 7, 2012]

§ 95.15–60 Odorizing units.

Each carbon dioxide extinguishing system installed or altered after July

9, 2013, must have an approved odorizing unit to produce the scent of wintergreen, the detection of which will serve as an indication that carbon dioxide gas is present in a protected area and any other area into which the carbon dioxide may migrate. “Altered” means modified or refurbished beyond the maintenance required by the manufacturer’s design, installation, operation and maintenance manual.

[USCG–2006–24797, 77 FR 33878, June 7, 2012]

§ 95.15–90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§95.15–5 through 95.15–40 insofar as is reasonable and practicable, with the exception of §95.15–5(d)(1), (2) and (4) covering spaces other than cargo spaces, which systems may be installed in accordance with paragraphs (a) (3) through (6) of this section.

(3) In boilerrooms, the bilges shall be protected by a system discharging principally below the floor plates. Perforated pipe may be used in lieu of discharge nozzles for such systems. The number of pounds of carbon dioxide shall be equal to the gross volume of the boilerroom taken to the top of the boilers divided by 36. In the event of an elevated boiler room which drains to the machinery space, the system shall be installed in the engineroom bilge and the gross volume shall be taken to the flat on which the boilers are installed.

(4) In machinery spaces where main propulsion internal combustion machinery is installed, the number of pounds of carbon dioxide required shall be equal to the gross volume of the space taken to the under side of the

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deck forming the hatch opening divided by 22.

(5) In miscellaneous spaces other than cargo or main machinery spaces the number of pounds of carbon dioxide required shall be equal to the gross volume of the space divided by 22.

(6) Branch lines to the various spaces other than cargo and similar spaces shall be as noted in Table 95.15-90(a)(6). This table is based on cylinders having discharge outlets and siphon tubes of $\frac{3}{8}$ inch diameter.

TABLE 95.15-90(a)(6)

| Number of cylinders | | Nominal pipe size, inches |
|---------------------|----------|------------------------------|
| Over | Not over | |
| | 2 | $\frac{1}{2}$ —standard. |
| 2 | 4 | $\frac{3}{4}$ —standard. |
| 4 | 6 | 1—extra heavy. |
| 6 | 12 | $1\frac{1}{4}$ —extra heavy. |
| 12 | 16 | $1\frac{1}{2}$ —extra heavy. |
| 16 | 27 | 2—extra heavy. |
| 27 | 39 | $2\frac{1}{2}$ —extra heavy. |
| 39 | 60 | 3—extra heavy. |
| 60 | 80 | $3\frac{1}{2}$ —extra heavy. |
| 80 | 104 | 4—extra heavy. |
| 104 | 165 | 5—extra heavy. |

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by USCG-1999-6216, 64 FR 53226, Oct. 1, 1999]

Subpart 95.16—Fixed Clean Agent Gas Extinguishing Systems, Details

SOURCE: USCG-2006-24797, 77 FR 33879, June 7, 2012, unless otherwise noted.

§ 95.16-1 Application.

(a) “Clean agent” means a halocarbon or inert gas used as a fire extinguishing agent.

(b) A clean agent extinguishing system must comply with this part. Systems contracted for prior to July 9, 2012, may, as an alternative, comply with 46 CFR 95.16-90.

(c) Each clean agent system must:

(1) Be of a total flooding type to protect against Class B and Class C hazards as defined in 46 CFR 95.50-5;

(2) Address and minimize any hazard to personnel created by the effects of extinguishing agent decomposition products and combustion products, especially the effects of decomposition product hydrogen fluoride (HF), if applicable;

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(3) Be accompanied by an approved manufacturer’s design, installation, operation, and maintenance manual;

(4) Be used only to protect enclosed spaces;

(5) Not employ electric power for system actuation or controls; and

(6) Not use any source of power for alarms in protected spaces, other than the extinguishing agent, gas from pilot cylinders, or gas from cylinders specifically provided to power the alarms.

§ 95.16-5 Controls.

(a) At least one releasing station must be installed near the main entrance/exit to the protected space.

(b) System controls must be of an approved type and be suitably protected from damage and located outside the protected space.

(c) Systems must have releasing stations consisting of one control to operate the stop valve to the protected space and a second control to release at least the required amount of agent. These two controls must be located in a box or other enclosure clearly identified for the particular space.

(d) Systems protecting a single space not exceeding 6,000 cubic feet in gross volume may be installed without a stop valve if a suitable horizontal means of escape from the space exists.

(e) Controls may not be located in any space that could be cut off from the operator in the event of fire in the protected space.

(f) Where the extinguishing agent can be released by remote control, the system must have a manual local control at the cylinders.

(g) Systems with remotely operated releasing controls must have mechanical override features.

(h) Automatic discharge arrangements may be used for spaces having a gross volume less than 6,000 cubic feet. However, automatic discharge is required for spaces having a gross volume less than 6,000 cubic feet where the agent is stored in the protected space, as allowed by 46 CFR 95.16-20.

(i) A system designed to use gas pressure from one or more agent storage cylinders and provide pilot pressure to actuate the release of extinguishing agent from other storage cylinders

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that contain three or more total storage cylinders must be equipped with at least two designated pilot cylinders, each of which is capable of manual control at the pilot cylinder.

§ 95.16–10 Piping, fittings, valves, nozzles.

(a) Piping, fittings, and valves must be:

(1) In accordance with the manufacturer's approved design, installation, operation, and maintenance manual;

(2) Securely supported and when necessary protected against damage;

(3) Protected inside and out against corrosion; and

(4) Equipped with:

(i) Dead end lines (dirt traps) that extend at least 2 inches beyond the last nozzle of each distribution line and that are closed with a cap or plug; and

(ii) Drains and dirt traps, fitted where necessary to prevent dirt or moisture accumulation and located in accessible locations where possible.

(b) *Piping requirements.* Piping must be:

(1) Used exclusively for extinguishing system purposes;

(2) Protected by a pressure relief valve in sections where gas pressure can be trapped between closed valves; and

(3) Welded if it passes through living quarters.

(c) *Piping prohibitions.* Piping must not:

(1) Use rolled groove or cut groove ends; or

(2) Be fitted with drains or other openings if it passes through living quarters.

(d) *Valve requirements.* Valves for system operation must be:

(1) Outside the protected space, and

(2) Marked, if serving a branch line, to indicate the space the branch line serves.

(e) *Valve prohibitions.* Valves may not be located in any space that could be cut off from the operator in the event of fire in the protected space.

§ 95.16–15 Extinguishing agent: Quantity.

A separate supply need not be provided for each space protected, but the total available supply must be at least

sufficient for the space requiring the greatest amount.

§ 95.16–20 Extinguishing agent: Cylinder storage.

(a) Unless installed as required in paragraph (b) of this section, the agent must be stored outside of the protected space. Common bulkheads and decks located between the cylinder storage room and the protected spaces must meet the insulation criteria for Class A–60, as defined in 46 CFR 72.05–10.

(b) The cylinders may be stored inside the protected space, if:

(1) The space does not exceed 6,000 cubic feet gross volume; and

(2) The system can be automatically operated by a pneumatic heat actuator as well as a remote manual control.

(c) The cylinder storage space must be properly ventilated and designed to preclude an anticipated ambient temperature in excess of 130 °Fahrenheit.

(d) The cylinders must be securely fastened and supported as directed in the manufacturer's approved design, installation, operation, and maintenance manual, and where necessary protected against damage.

(e) The cylinders must be mounted so they are readily accessible and capable of easy removal for recharging and inspection and for weighing in the case of halocarbon system cylinders.

(f) The cylinders must be installed to provide a space of at least 2 inches between the deck and the bottom of the cylinders. A tray or other bottom support located 2 inches above the deck is an acceptable arrangement.

(g) The cylinders must be mounted upright, unless otherwise specified in the instruction manual.

(h) All cylinder storage room doors must open outward.

§ 95.16–25 Manifold and cylinder arrangements.

(a) A check valve must be provided between each cylinder and manifold or distribution piping. The valve must be permanently marked to indicate the direction of flow.

(b) If the same cylinder is used to protect more than one space, normally, closed stop valves must be provided to direct the agent into each protected space.

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(c) Each cylinder must be fabricated, tested, and marked in accordance with 46 CFR 147.60(b) and 49 CFR part 180.

(d) The cylinders in a common manifold must be:

- (1) Of the same size;
- (2) Filled with the same amount of agent; and
- (3) Pressurized to the same working pressure.

§ 95.16–30 Enclosure openings.

(a) If mechanical ventilation is provided for in a protected space, the ventilation system must automatically shut down prior to discharge of the system to that space.

(b) If natural ventilation is provided for in a space protected by a clean agent extinguishing system, the ventilation must be capable of being easily and effectively closed off.

(c) All other openings to a protected space must be capable of being closed. Doors, shutters, or dampers must be installed for openings in the lower portion of the space. Openings in the upper portion of the space must be capable of being closed off either by permanently installed means or by the use of canvas or other material normally carried on the vessel.

§ 95.16–35 Pressure relief.

Tight compartments, like refrigeration spaces and paint lockers, must have a way to relieve the accumulation of excessive pressure within the compartment when the extinguishing agent is injected.

§ 95.16–40 Locked spaces.

If a space or enclosure containing extinguishing agent supply or controls is lockable, a key to the space or enclosure must be in a break glass type box conspicuously located adjacent to the opening.

§ 95.16–45 Pre-discharge alarms and time delay devices.

(a) Each system protecting a space with greater than 6,000 cubic feet gross volume or a space less than 6,000 cubic feet gross volume without a suitable horizontal escape route must have a pneumatic pre-discharge alarm and time delay.

- (1) The time delay period must:

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- (i) Last at least 20 seconds;
- (ii) Be approved by the Officer in Charge, Marine Inspection during system installation; and
- (iii) Provide enough time for one person to walk from the farthest area of the protected space to the primary exit.

(2) The time delay device must be pneumatically operated and have an accuracy of -0/ + 20 percent of the rated time delay period throughout the operating temperature range and range of delay settings.

- (b) The pre-discharge alarm must:
 - (1) Sound for the duration of the time delay;
 - (2) Be conspicuously and centrally located in the protected space and marked as required by 46 CFR 97.37–9;
 - (3) Depend on the extinguishing agent, gas from a pilot cylinder, or a nitrogen cylinder specifically provided to power the alarm for its source of power; and
 - (4) Be audible over running machinery.

§ 95.16–50 Instructions.

(a) Simple, complete operating instructions must be conspicuously located at or near any release station and in the extinguishing agent cylinder storage room.

(b) On a system in which extinguishing agent cylinders are stored outside the protected space, operating instructions must also:

- (1) Include a schematic diagram of the system; and

(2) Describe alternate methods of discharging the extinguishing agent into protected spaces should the manual releases or stop valve controls fail to operate.

§ 95.16–60 System piping installation testing.

(a) *Halocarbon systems.* A pressure test using the extinguishing agent, air or inert gas, must be conducted on halocarbon system discharge piping on completion of piping installation and before extinguishing agent cylinders are connected.

- (1) Except as otherwise specified in this section:

- (i) Piping from the cylinders to the stop valves or selector valves must be

subjected to a pressure of 1½ times the cylinder charging pressure at 70 °Fahrenheit; and

(ii) The leakage during a 2-minute period must not exceed a pressure drop of 10 percent of the test pressure.

(2) Individual branch lines to a protected space must be tested as described in paragraph (a)(1) of this section, except that:

(i) The pressure must be 150 pounds per square inch; and

(ii) Distribution piping must be capped within the protected space at the first joint upstream of the nozzles.

(3) Pneumatic actuation piping must be tested as described in paragraph (a)(1) of this section.

(b) *Inert gas systems.* A pressure test using air or inert gas must be conducted on each inert gas system's piping on completion of piping installation and before extinguishing agent cylinders are connected.

(1) Except as otherwise specified in this section:

(i) Piping from the cylinders to the stop valves or selector valves must be subjected to a pressure of 1,000 pounds per square inch (psi) at 70 °Fahrenheit; and

(ii) The leakage during a 2-minute period must not exceed a pressure drop of 100 psi.

(2) Individual branch lines to a protected space must be tested as described in paragraph (b)(1) of this section, except that:

(i) The pressure must be 600 psi; and

(ii) Distribution piping must be capped within the protected space at the first joint upstream of the nozzles.

(3) Pneumatic actuation piping must be tested as described in paragraph (b)(1) of this section.

(c) *Small independent systems.* In lieu of test requirements in paragraphs (a) or (b) of this section, a small independent halocarbon or inert gas system, like those found in emergency generator rooms and paint lockers, may be tested by blowing out the piping with air pressure of at least 100 psi, if:

(1) There are no valves in the system discharge piping; and

(2) There is not more than one change in direction between the agent container and the discharge nozzle.

§ 95.16-90 Installations contracted for prior to July 9, 2012.

Installations contracted for prior to July 9, 2012, must meet the requirements of this subpart unless previously approved existing arrangements, materials, and facilities are:

(a) Maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection; and

(b) Subjected to no more than minor repairs or alterations implemented to the same standards as the original installation.

Subpart 95.17—Foam Extinguishing Systems, Details

§ 95.17-1 Application.

(a) Where a foam extinguishing system is installed, the provisions of this subpart, with the exception of § 95.17-90, shall apply to all installations contracted for on or after November 19, 1952. Installations contracted for prior to November 19, 1952, shall meet the requirements of § 95.17-90.

§ 95.17-5 Quantity of foam required.

(a) *Area protected.* (1) For machinery and similar spaces, the system shall be so designed and arranged as to spread a blanket of foam over the entire tank top or bilge of the space protected. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

(2) Where an installation is made to protect an oil fired boiler installation on a flat which is open to or can drain to the lower engine room or other space, both the flat and the lower space shall be protected simultaneously. The flat shall be fitted with suitable coamings on all openings other than deck drains to properly restrain the oil and foam at that level. Other installations of a similar nature will be considered in a like manner.

(3) Where a system is installed to protect a tank, it shall be so designed and arranged as to spread a blanket of foam over the entire liquid surface of the tank within the range of usual trim. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

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(b) *Rate of application.* (1) For spaces other than tanks, the rate of discharge to foam outlets protecting the hazard shall be at least as set forth in this paragraph.

(i) For chemical foam systems with stored "A" and "B" solutions, a total of at least 1.6 gallons per minute of the two solutions shall be discharged for each 10 square feet of area protected.

(ii) For other types of foam systems, the water rate to the dry powder generators or air foam production equipment shall be at least 1.6 gallons per minute for each 10 square feet of area protected.

(2) For tanks, the rate of discharge to foam outlets protecting the hazard shall be as set forth in paragraph (b)(1) of this section, except that the value of 1 gallon per minute shall be substituted in both cases for the value of 1.6 gallons per minute.

(c) *Supply of foam producing material.* (1) There shall be provided a quantity of foam producing material sufficient to operate the equipment at the discharge rate specified in paragraph (b) of this section for a period of at least 3 minutes for spaces other than tanks, and for at least 5 minutes for tanks.

(d) *Separate supply of foam agent.* A separate supply of foam agent need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(e) *Water supply for required pumps.* Where pumps are required, the water supply shall be from outside the space protected and shall in no way be dependent upon power from the space protected.

§ 95.17-10 Controls.

(a) The foam agent, its container, and all controls and valves for the operation of the system shall be of an approved type.

(b) The foam agent container and all controls and valves for the operation of the system shall be outside the space protected and shall not be located in such space as might be cut off or made inaccessible in the event of fire in any of the spaces protected. The control space shall be as convenient as practicable to one of the main escapes from the spaces protected, and shall be

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marked as required by § 97.37-13 of this subchapter. Where pumps are required, it shall not be necessary that they be started from the control space.

(c) Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

(d) The valves to the various spaces served shall be marked as required by § 97.37-10 of this subchapter.

§ 95.17-15 Piping.

(a) All piping, valves, and fittings shall meet the applicable requirements of Subchapter F (Marine Engineering) of this chapter.

(b) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(c) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(d) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(e) Piping shall be used for no other purpose.

§ 95.17-20 Discharge outlets.

(a) Discharge outlets shall be of an approved type.

§ 95.17-25 Additional protection required.

(a) In order that any residual fires above the floor plates may be extinguished when a foam system is installed for the protection of spaces other than tanks, at least 2 fire hydrants, in addition to those required for the machinery space by Subpart 95.10, shall be installed outside of the machinery space entrance. Such hydrants shall be fitted with sufficient hose so that any part of the machinery space may be reached with at least 2 streams of water, and each hose shall be equipped with an approved combination nozzle, applicator, and self-cleaning strainer as described in § 95.10-10(i)(3).

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§ 95.17-90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§95.17-5 through 95.17-20, with the exception of §95.17-5(a)(2), insofar as is reasonable and practicable. A 6-inch blanket of foam in 5 minutes for tanks and 3 minutes for other spaces will be considered as meeting the requirements of §95.17-5.

Subpart 95.30—Automatic Sprinkler Systems, Details

§ 95.30-1 Application.

Automatic sprinkler systems shall comply with NFPA 13-1996.

[CGD 95-028, 62 FR 51207, Sept. 30, 1997]

Subpart 95.50—Hand Portable Fire Extinguishers and Semiportable Fire Extinguishing Systems, Arrangements and Details

§ 95.50-1 Application.

(a) The provisions of this subpart, with the exception of §95.50-90, shall apply to all vessels, other than unmanned barges and fishing vessels, contracted for on or after November 19, 1952. Such vessels contracted for prior to November 19, 1952, shall meet the requirements of §95.50-90.

§ 95.50-5 Classification.

(a) Hand portable fire extinguishers and semiportable fire extinguishing systems shall be classified by a combination letter and number symbol. The letter indicating the type of fire which the unit could be expected to ex-

tinguish, and the number indicating the relative size of the unit.

(b) The types of fire will be designated as follows:

(1) "A" for fires in ordinary combustible materials where the quenching and cooling effects of quantities of water, or solutions containing large percentages of water, are of first importance.

(2) "B" for fires in flammable liquids, greases, etc., where a blanketing effect is essential.

(3) "C" for fires in electrical equipment where the use of nonconducting extinguishing agent is of first importance.

(c) The number designations for size will start with "I" for the smallest to "V" for the largest. Sizes I and II are considered hand portable fire extinguishers and sizes III, IV, and V are considered semiportable fire extinguishing systems which shall be fitted with suitable hose and nozzle or other practicable means so that all portions of the space concerned may be covered. Examples of size graduations for some of the typical hand portable and semiportable fire extinguishing systems are set forth in Table 95.50-5(c).

TABLE 95.50-5(c)

| Classification | | Soda-acid and water, gallons | Foam, gallons | Carbon dioxide, pounds | Dry chemical, pounds |
|----------------|-----------|------------------------------|---------------|------------------------|----------------------|
| Type | Size | | | | |
| A | II | 2½ | 2½ | | |
| B | I | | 1¼ | 4 | 2 |
| B | II | | 2½ | 15 | 10 |
| B | III | | 12 | 35 | 20 |
| B | IV | | 20 | 50 | 30 |
| B | V | | 40 | 100 | 50 |
| C | I | | | 4 | 2 |
| C | II | | | 15 | 10 |

(d) All hand portable fire extinguishers and semiportable fire extinguishing systems shall have permanently attached thereto a metallic name plate giving the name of the item, the rated capacity in gallons, quarts, or pounds, the name and address of the person or firm for whom approved, and the identifying mark of the actual manufacturer.

(e) Vaporizing-liquid type fire extinguishers containing carbon tetrachloride or chlorobromomethane or

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other toxic vaporizing liquids shall be removed from all vessels.

[CGFR 65-50, 30 FR 17001, Dec. 30, 1965, as amended by USCG-2014-0688, 79 FR 58282, Sept. 29, 2014]

§ 95.50-10 Location.

(a) Approved hand portable fire extinguishers and semiportable fire extinguishing systems shall be installed in

accordance with Table 95.50-10(a). The location of the equipment shall be to the satisfaction of the Officer in Charge, Marine Inspection. Nothing in this paragraph shall be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional equipment as he deems necessary for the proper protection of the vessel.

TABLE 95.50-10(a)—HAND PORTABLE FIRE EXTINGUISHER AND SEMI-PORTABLE FIRE-EXTINGUISHING SYSTEMS

| Space | Classification (see § 95.50-5) | Quantity and location |
|---|-------------------------------------|---|
| <i>Safety areas¹</i> | | |
| Wheelhouse or fire control room ..... | ..... | None required. |
| Stairway and elevator enclosures ..... | ..... | Do. |
| Communicating corridors | A-II | 1 in each main corridor not more than 150 feet apart. (May be located in stairways.) |
| Lifeboat embarkation and lowering stations ..... | ..... | None required. |
| Radio room. | ..... | ..... |
| C-1 ² | 2 in vicinity of exit. ² | ..... |
| <i>Accommodations¹</i> | | |
| Staterooms, toilet spaces, public spaces, offices, lockers, isolated storerooms, and pantries, open decks, etc. | ..... | None required. |
| <i>Service spaces¹</i> | | |
| Galleys | B-II or C-II | 1 for each 2,500 square feet or fraction thereof suitable for hazards involved. |
| Paint and lamp rooms | B-II | 1 outside space in vicinity of exit. |
| Accessible baggage, mail, and specie rooms, and storerooms ... | A-II | 1 for each 2,500 square feet or fraction thereof located in vicinity of exits, either inside or outside the spaces. |
| Carpenter shop and similar spaces | A-II | 1 outside the space in vicinity of exit. |
| <i>Machinery spaces</i> | | |
| Coal-fired boilers: Bunker and boiler space ..... | ..... | None required. |
| Oil-fired boilers: Spaces containing oil-fired boilers, either main or auxiliary, or their fuel-oil units. | B-II; B-V | 2 required ³ ; 1 required. ⁴ |
| Internal combustion or gas turbine propelling machinery spaces | B-II | 1 for each 1,000 brake horsepower, but not less than 2 nor more than 6. ⁵ |
| ..... | B-III | 1 required. ^{6,7} |
| Electric propulsive motors or generators of open type | C-II | 1 for each propulsion motor or generator unit. |
| Enclosed ventilating systems for motors and generators of electric propelling machinery. | ..... | None required. |
| <i>Auxiliary spaces:</i> | | |
| Internal combustion or gas turbine | B-II | 1 outside the space in vicinity of exit. ⁷ |
| Electric emergency motors or generators | C-II | 1 outside the space in vicinity of exit. ⁸ |
| Steam ..... | ..... | None required. |
| Trunks to machinery spaces ..... | ..... | Do. |
| Fuel tanks ..... | ..... | Do. |
| <i>Cargo spaces</i> | | |
| Inaccessible during voyage, including trunks and cargo tanks ..... | ..... | Do. |
| Accessible during voyage ..... | ..... | Do. |

¹For motorboats, the total number of hand portable fire extinguishers required for safety areas, accommodation spaces, and service spaces shall be 1 B-II for motorboats of less than 50 gross tons and 2 B-II for motor boats of 50 gross tons and over. Two B-I hand portable fire extinguishers may be substituted for 1 B-II.

²For vessels on an international voyage, substitute 1 C-II in vicinity of exit.

³Vessels of less than 1,000 gross tons require 1.

⁴Vessels of less than 1,000 gross tons may substitute 1 B-IV.

⁵Only 1 required for motorboats.

⁶If oil burning donkey boiler fitted in space, the B-V previously required for the protection of the boiler may be substituted. Not required where a fixed carbon dioxide system is installed.

⁷Not required on vessels of less than 300 gross tons if fuel has a flashpoint higher than 110 °F.

⁸Not required on vessels of less than 300 gross tons.

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(b) Semiportable fire extinguishing systems shall be located in the open so as to be readily seen.

(c) If hand portable fire extinguishers are not located in the open or behind glass so that they may be readily seen, they may be placed in enclosures together with the fire hose, provided such enclosures are marked as required by § 97.37–15 of this subchapter.

(d) Hand portable fire extinguishers and their stations shall be numbered in accordance with § 97.37–23 of this subchapter.

(e) Hand portable or semiportable extinguishers, which are required on their nameplates to be protected from freezing, shall not be located where freezing temperatures may be expected.

§ 95.50–15 Spare charges.

(a) For all vessels other than motorboats spare charges shall be carried for at least 50 percent of each size and each variety, i.e. foam, soda-acid, carbon dioxide, etc., of hand portable fire extinguisher required by § 95.50–10(a). However, if the unit is of such variety that it cannot be readily recharged by the vessel's personnel, one spare unit of the same classification shall be carried in lieu of spare charges for all such units of the same size and variety.

(b) Spare charges shall be so packaged as to minimize the hazards to personnel while recharging the units. Acid shall be contained in a Crown stopper type of bottle.

§ 95.50–20 Semiportable fire extinguishers.

(a) The frame or support of each size III, IV, and V fire extinguisher required by Table 95.50–10(a) must be welded or otherwise permanently attached to a bulkhead or deck.

(b) If an approved size III, IV, or V fire extinguisher has wheels and is not required by Table 95.50–10(a), it must be securely stowed when not in use to prevent it from rolling out of control under heavy sea conditions.

[CGD 77–039, 44 FR 34133, June 14, 1979]

§ 95.50–90 Vessels contracted for prior to November 19, 1952.

(a) Vessels contracted for prior to November 19, 1952, shall meet the following requirements:

(1) The provisions of §§ 95.50–5 through 95.50–15 shall be met with the exception that existing installations in safety areas and service spaces may be maintained if in the opinion of the Officer in Charge, Marine Inspection, they are in general agreement with the degree of safety prescribed by Table 95.50–10(a). In such cases, minor modifications may be made to the same standard as the original installation: *Provided*, That in no case will a greater departure from the standards of Table 95.50–10(a) be permitted than presently exists.

Subpart 95.60—Fire Axes

§ 95.60–1 Application.

(a) The provisions of this subpart shall apply to all vessels other than motorboats.

§ 95.60–5 Number required.

(a) All vessels except barges shall carry at least the minimum number of fire axes as set forth in Table 95.60–5(a). Nothing in this paragraph shall be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional fire axes as he deems necessary for the proper protection of the vessel.

TABLE 95.60–5(a)

| Gross tons | | Number of axes |
|------------|----------|----------------|
| Over | Not over | |
| | 50 | 1 |
| 50 | 200 | 2 |
| 200 | 500 | 4 |
| 500 | 1,000 | 6 |
| 1,000 | | 8 |

(b) Manned barges shall carry at least two fire axes.

§ 95.60–10 Location.

(a) Fire axes shall be distributed throughout the spaces available to persons on board so as to be most readily available in the event of emergency.

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(b) If fire axes are not located in the open, or behind glass, so that they may be readily seen, they may be placed in enclosures together with the fire hose, provided such enclosures are marked as required by §97.37-15 of this subchapter.

PART 96—VESSEL CONTROL AND MISCELLANEOUS SYSTEMS AND EQUIPMENT

Subpart 96.01—Application

Sec.

96.01-1 General.

96.01-3 Incorporation by reference.

Subpart 96.03—Marine Engineering Systems

96.03-1 Installation and details.

Subpart 96.05—Electrical Engineering and Interior Communications Systems

96.05-1 Installation and details.

Subpart 96.06—Lifesaving Appliances and Arrangements

96.06-1 Installation.

Subpart 96.07—Anchors, Chains, and Hawsers

96.07-1 Application.

96.07-5 Ocean, coastwise, or Great Lakes service.

96.07-10 Lakes, bays, and sounds, or river service.

96.07-90 Vessels contracted for prior to November 19, 1952.

Subpart 96.17—Magnetic Compass and Gyrocompass

96.17-1 When required.

Subpart 96.25—Radar

96.25-1 When required.

Subpart 96.27—Sounding Equipment

96.27-1 When required.

Subpart 96.30—Protection From Refrigerants

96.30-1 Application.

96.30-5 General.

96.30-15 Self-contained breathing apparatus.

96.30-90 Vessels contracted for before November 23, 1992.

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Subpart 96.35—Fireman's Outfit

96.35-1 Application.

96.35-5 General.

96.35-10 Fireman's outfit.

96.35-15 Stowage.

96.35-20 Spare charges.

96.35-90 Vessels contracted for before November 23, 1992.

Subpart 96.40—Pilot Boarding Equipment

96.40-1 Pilot boarding equipment.

AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

SOURCE: CGFR 65-50, 30 FR 17008, Dec. 30, 1965, unless otherwise noted.

Subpart 96.01—Application

§ 96.01-1 General.

(a) The provisions of this part shall apply to all vessels except as specifically noted in this part.

§ 96.01-3 Incorporation by reference.

(a) Certain materials are incorporated by reference into this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a). To enforce any edition other than the one listed in paragraph (b) of this section, notice of the change must be published in the FEDERAL REGISTER and the material made available to the public. All approved material is on file at the Office of the Federal Register, Washington, DC 20408, and at the Coast Guard Headquarters. Contact Commandant (CG-ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593-7509. The material is also available from the address indicated in paragraph (b).

(b) The material approved for incorporation by reference in this part, and the sections affected is:

American Society for Testing and Materials (ASTM)

100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM F 1014-92, Standard Specification for Flashlights on Vessels—96.35-5